

# Going-to-the-Sun Road

## O V E R V I E W



ENGINEERING STUDY ■ SOCIOECONOMIC STUDY  
TRANSPORTATION and VISITOR USE STUDY

PREPARED for GLACIER NATIONAL PARK  
AUGUST 2001

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## Introduction

Glacier National Park is a unique national treasure because of its breathtaking scenery, abundance of wildlife, and its cultural and spiritual significance to generations of Americans. The park has preserved native plants and animals in a relatively undisturbed ecosystem, allowing human visitors to observe wildlife in its natural environment as it existed generations ago. The park's unique and precious character has earned the venerable and protective designation of an International Peace Park. It is a unit of the Waterton-Glacier International Peace Park, the first national park in the world to be legislatively paired with another in the spirit of international peace and cooperation. It is also designated as a World Heritage Site, recognizing its outstanding universal value to people throughout the world.

Glacier's high country is accessible to visitors via the spectacular Going-to-the Sun Road (the Road). This 50-mile road winds over the Continental Divide and provides the opportunity for visitors to see areas of the park that would otherwise only be accessible by days of hiking or horseback riding. Constructed in the early part of the 20<sup>th</sup> Century, the Road is an engineering marvel. Because of its unique character, the challenges involved in its original design and construction, and its cultural and historical significance, the Road has received several distinctions. It was placed on the National Register of Historic Places in 1983, declared a National Historic Civil Engineering Landmark in 1985, and listed as a National Historic Landmark in 1997.

For more than 15 years, the deteriorating condition of this historic road has been the subject of much discussion and study. Years of underfunded maintenance, increasing visitor use, and often brutal weather conditions have created major structural problems and degradation of the Road and its structures.

The Going-to-the-Sun Road is in desperate need of rehabilitation. The deterioration of the roadway, drainage features, retaining walls, and guardwalls continues, and

must be slowed or stopped as soon as possible. Studies and observations have shown that it is especially critical to improve drainage immediately to slow the overall deterioration of the Road.

Proper maintenance is also imperative to preserve the roadway, maintain and enhance the visitor experience, and protect the park's natural resources. Many of the Road's facilities are suffering from lack of proper maintenance, which leads to general – and in some cases catastrophic – deterioration. The park has comprehensive operations and maintenance plans to address these issues; however, it does not have the financial means to carry out these plans. More funding is needed to implement basic maintenance and preservation activities.

Time is of the essence for addressing the critical needs of the Going-to-the-Sun Road. Rehabilitation efforts must be expedited in order to assure the integrity of this landmark Road.

In 1999, Glacier National Park approved a General Management Plan (GMP) to address the management and maintenance needs of the park for the next twenty years or more. One of the critical issues identified in the GMP is the preservation of the Going-to-the-Sun Road.

The National Park Service's mission is to conserve the scenery, wildlife, and the natural and historic objects inside the park and to protect the natural resources as cumulative expressions of a single national heritage. To assist in that effort, the Park Service established a Citizens Advisory Committee by authority of the Secretary of the Interior under Section 3 of Public Law 91-383 (16 U.S.C. 1a-2c) to review rehabilitation alternatives and advise the park on the best course of action for rehabilitation of the Going-to-the-Sun Road.

Under the direction of the park and the Advisory Committee, a team of specialists, selected by park staff, conducted studies and field reconnaissance in order to prepare engineering, transportation and visitor use, and socioeconomic reports. The purpose of these reports is to identify, explore, and develop alternatives for rehabilitating the Road. The reports detail the criteria, considerations, and alternatives necessary to access the best available technology to reduce costs and mitigate impacts to visitors when rehabilitating the Road. The development of rehabilitation alternatives incorporated the following factors:

**Historic/Cultural.** Respect for and preservation of historical features and the cultural significance of the Road. Special care must be taken during rehabilitation activities to preserve the unique character and importance of this historic landmark.

**Visitor Experience.** The original purpose of building the Road was to provide visitor access to this spectacular park. Maintaining a positive visitor experience during rehabilitation is a primary objective of the park.

**Engineering.** When this Road was constructed eighty years ago, there were engineering and design challenges that are still amazing even with today's technology. Rehabilitation will be just as challenging, especially with the added consideration of mitigating impacts to thousands of visitors each year and the associated socioeconomics.

**Traffic Management.** When the Road opened in 1933, 40,000 cars per year traveled on the Road. Today, the annual total is nearly 500,000 cars, carrying approximately two million visitors. This presents an enormous traffic management challenge that must be addressed comprehensively in each rehabilitation alternative.

**Transportation.** Providing public transit alternatives to get cars off the Road and to make the visitor experience more enjoyable during the rehabilitation is a key component to any plan for the future of this heavily traveled, landmark Road.

**Socioeconomics.** Many local communities depend on tourism and visitor spending in the area to survive. Consideration for the interests of the surrounding communities and local businesses is also a priority for the park.

## Purpose and Need

The GMP is the foundation of a tiered planning and decision-making process in the park. Before specific actions are taken, a site-specific examination and analysis of each action has to be completed to comply with the National Environmental Policy Act and section 106 of the National Historic Preservation Act. The GMP, through an extensive public involvement process, identified the preservation/rehabilitation of the Going-to-the-Sun Road as a priority for the park. The GMP called for further study of engineering, visitor use, and economic impacts to determine and evaluate rehabilitation alternatives for the Road that are in the best interest of the Road, the park, visitors, and local communities. The GMP states that the goal of the rehabilitation is to "reconstruct the Going-to-the-Sun Road to preserve its historic character and signifi-

cance, complete the needed repairs before the Road could fail, minimize impacts on natural resources, visitors, and the local economy, and minimize the reconstruction costs."

The purpose and directive of the *Engineering Study, Transportation and Visitor Use Study, and Socioeconomic Study* are to provide the necessary tools to the Citizens Advisory Committee so that they may make recommendations to the park concerning the rehabilitation of the Going-to-the-Sun Road. These tools, in the form of alternatives, costs, construction durations, traffic management, visitor impacts, and mitigation strategies, will provide focus for the project so that the Committee can make informed recommendations based on desired outcomes for the Road.

## Process

These reports were prepared in draft form for review and comment by the Citizens Advisory Committee and Glacier National Park Staff. Based on input from park staff and the Advisory Committee, all reports have been revised and finalized. The involvement of the Advisory Committee has helped to ensure that the assumptions, process, data, and findings of this project not only include the most comprehensive information available, but also generate support for those charged with implementation of the final rehabilitation strategy. By reviewing draft documents and participating in the process from start to finish, the Advisory Committee will have sufficient information to make an informed recommendation to the Park Service for rehabilitation of the Going-to-the-Sun Road.

A survey of businesses in the local impact area is scheduled for completion in early autumn (2001). The results of this survey will be provided to the park and the Advisory Committee in a supplemental report. The survey of businesses will provide information on perceptions of the local economic effects of the rehabilitation of the Going-to-the-Sun Road. The survey will also provide useful insight on tourism and suggested mitigation strategies during rehabilitation.

After these Final Reports are reviewed and accepted, the Advisory Committee and park staff will make their recommendation for a rehabilitation alternative for further analysis in the next phase of the process, the Environmental Impact Statement (EIS). The EIS includes analyses of impacts to water, air, designated park space, open space, historical features, cultural significance, transportation, and local economies, and will build upon much of the investigation analyses in these reports. Design and

implementation of the recommended rehabilitation alternative will commence following the Record of Decision, which is the final step in the EIS process.

### Schedule

Draft documents presented to Advisory Committee and Park Staff for review	05/07/01
Draft documents placed on web site and in local libraries for public review	05/09/01
Review of draft documents completed by Advisory Committee and Park Staff	06/08/01
Consolidated comments from Advisory Committee, the public, and Park Staff forwarded to the consulting team for Final Report	06/22/01
Final Reports submitted to Advisory Committee and Park Staff	08/10-20/01
Final Report posted on website and copies sent to local libraries	08/23/01
Public input period on Final Report closed	09/03/01
Public input comments distributed to Advisory Committee	09/12/01
Advisory Committee workshop	09/19-21/01
Draft recommendations placed on web site and distributed to libraries	09/24/01
Public input period on draft recommendations closed	10/26/01
Final Advisory Committee meeting	11/15/01
Final Advisory Committee recommendations released	11/16/01

### Summary of Alternatives

The alternatives in each of the reports are intended to provide the Advisory Committee and park staff with viable scenarios on which to base their decision for a rehabilitation plan for the Road.

The rehabilitation alternatives include engineering, traffic management, transportation, economic, and visitor amenity considerations. Engineering options include various technical applications that provide for a range from long life cycle with low operations and maintenance needs, to a shorter life cycle with higher operation and maintenance needs. Traffic management options include a range from most traffic delay to least traffic delay. Transportation options include a range from no change to frequent transit service. The socioeconomic impacts of the overall rehabilitation were evaluated and will depend on the selection of options within each alternative.

### Engineering

Based on a thorough review of previous studies, detailed field reconnaissance, and input from park staff, the engineering team identified several alternatives to preserve the Road's historical significance, maximize the availability of the Road during rehabilitation, minimize the impacts to visitors, and mitigate the demands of long-term maintenance.

Engineering alternatives include the means and methods of rehabilitating the Road and its structures, the extent of safety improvements, rehabilitation staging, contract packaging, and traffic management plans. Considering the historic significance of the Road, all rehabilitation must be consistent with the guidelines of historic preservation. The alternatives for implementing the rehabilitation and managing traffic provide a range of scenarios, varying in cost, visitor impact, and duration:

**Alternative 1: Repair As Needed** provides for basic operations and maintenance of the Road with \$2 million per year funding for rehabilitation efforts. Repairs are made without substantial pre-planning or design, based on the needs and priorities of the Road. Little opportunity exists for assuring that the historical, cultural, long-term maintenance, environmental, and visitor impacts are considered or mitigated. Work occurs on the Road when the Road is open to visitors. This alternative has the highest cost and duration, the most potential for major failures, significant delays, and unplanned road closures.

**Alternative 2: Priority Rehabilitations** provides for rehabilitation with \$5 million per year funding and includes planning and design in concert with the historical, cultural, environmental, socioeconomic, and long-term maintenance considerations. Visitor impact has a better opportunity to be mitigated as the work is planned and includes integrated traffic and visitor management in accordance with the park's current practice. Work occurs on the Road when the Road is open to visitors. Even though this

alternative has a plan for rehabilitation, there is still a significant potential for major failures, delays, and road closures.

**Alternative 3: Comprehensive Shared Use** balances the needs of the rehabilitation with visitor use, and incorporates the engineering, historical, cultural, environmental, socioeconomic, and long-term maintenance considerations. Work proceeds on the Road while the Road is open to visitors; however, rehabilitation work that requires significant visitor delays is performed during times of low visitor use. A tremendous opportunity exists for overall schedule and cost effectiveness in using this alternative.

**Alternative 4: Extended Rehabilitation Season** uses the same concepts as the Comprehensive Shared Use alternative; however, the Road is only open to visitors between July 1 and October 1 of each year. By allowing work to proceed unimpeded outside these dates, the schedule of the rehabilitation is reduced by approximately one year. This alternative comes with a high cost, as access and weather conditions could reduce overall productivity considerably.

**Alternative 5: Road Segment Closures** brings forth all of the considerations in the rehabilitation and allows work to proceed on the Road while segments of the Road are closed from 7 p.m. Sunday to 10 a.m. Friday throughout the visitor season. Traffic is unimpeded on the weekends and holidays. This alternative provides a means for cost and schedule effectiveness for rehabilitating the Road, except for visitor impact.

## Transportation

The Transportation and Visitor Use Study identifies transit and transportation management options to provide visitors with an alternative to driving and potentially relieve the increased congestion that will most likely result from the rehabilitation. A combination of these options could be implemented during rehabilitation of the Road and/or as part of a long-term transportation improvement plan.

**Transit.** Each alternative is comprised of shuttle bus service from West Glacier to St. Mary over Going-to-the-Sun Road.

- **Option A – Existing Shuttle Service.** This option represents the existing shuttle bus system currently operated by Glacier Park, Inc. (GPI). This service has headways (i.e. the time between buses) of between two hours and five and a half hours.

- **Option B – Improved Shuttle Service.** This alternative is designed to provide an improvement over the existing shuttle system. Transit vehicles would leave the west side and east side of the Road every 60 minutes.
- **Option C – Aggressive Shuttle Service.** This alternative is designed to provide a significant improvement over the existing shuttle system. Routes would be the same as Option B, but service would be provided every 30 minutes.

## Transportation Management

In addition to transit enhancements, other transportation improvements can be implemented during rehabilitation and maintained throughout the long term.

Transportation Demand Management (TDM) strategies will be necessary for transit to become an effective congestion mitigation measure. The primary purpose of a TDM program is to reduce travel demand and increase utilization of the transit system. An effective TDM program includes:

- incentives (such as on-demand transit options or reduced ticket prices for transit users)
- disincentives (such as increased private vehicle entry fees)
- supporting measures (to encourage visitors to choose the transit system over their private automobile)

## Visitor Use

The *Transportation and Visitor Use Study* also addresses visitor use improvement options, the implementation of which will benefit visitors both during and after the Road's rehabilitation. Visitor use improvement options are addressed on two levels: general improvement options, which can be applied to most areas of the Road; and detailed, site-specific improvements for key visitor use areas on the Road. Both the general and site-specific improvement options incorporate the following elements as appropriate:

**Use Leveling.** Distribute visitor use from crowded areas to less used areas

**Physical improvements.** Upgrade or expand park facilities

**Transit enhancements.** Implement or improve public transportation facilities

## Socioeconomic

The *Socioeconomic Study* analyzed each of the rehabilitation alternatives in terms of impacts to visitor stays and expenditures in the local area and in the remainder of Montana based on responses from the 2000 Survey of Visitors and the 2001 Survey of Potential Visitors.

## Conclusions and Recommendations

The time to begin rehabilitating the Going-to-the-Sun Road is now. Swift and decisive action is needed to slow and stop further deterioration of the Road, safeguard the natural resources and historic features of the park, and preserve the visitor experience. Additional funding must also be secured to support not only the rehabilitation efforts, but a comprehensive maintenance plan for the preservation of the Road and the safety of park visitors.

Changes in visitor numbers and expenditures were calculated for Alternatives 3, 4, and 5, and their cumulative economic impacts for the duration of the Road rehabilitation compared to Alternative 1 are as follows:

### **Alternative 3, Comprehensive Shared Use (over 9 years)**

Alternative 1, visitors during construction:	13,858,546
Visitor expenditures:	\$1,428,761,000
Alternative 3 visitors during construction:	(1,902,501)
Expenditure reduction	(\$190,847,000)

### **Alternative 4, Extended Rehabilitation Season (over 8 years)**

Alternative 1, visitors during construction:	12,316,225
Visitor expenditures:	\$1,269,754,000
Alternative 4 visitors during construction:	(2,149,921)
Expenditure reduction	(\$216,888,000)

### **Alternative 5, Road Segment Closures (over 7 years)**

Alternative 1, visitors during construction:	10,773,910
Visitor expenditures:	\$1,110,747,000
Alternative 5 visitors during construction:	(2,651,841)
Expenditure reduction	(\$280,206,000)

Following is a summary of the priorities and recommendations for the Going-to-the-Sun Road based on the results of the *Engineering Study*, *Transportation and Visitor Use Study*, and *Socioeconomic Study*:

- Visitor safety issues are present and need to be addressed as soon as possible with respect to localized slope stability.
- The deterioration of the roadway, drainage features, retaining walls, and guard-walls continues. This deterioration needs to be slowed or stopped as soon as possible. It is critical to improve drainage now to slow the deterioration. Additional funding is strongly recommended for drainage improvements in the next few years until an overall rehabilitation plan can be implemented.
- Annual maintenance funding must be increased substantially to protect the Road from further deterioration and to protect the capital investment once the Road is rehabilitated.
- In addition to the critical retaining wall design and rehabilitation projects underway, designs for other critical areas must advance as soon as possible. Rehabilitation design criteria must include historic, cultural, and environmental considerations as well as strategies for visitor management.
- Improvements to the shuttle system and visitor use areas should be undertaken concurrent with or prior to rehabilitation of the Road to help offset impacts to the visitor experience caused by the rehabilitation. An improved shuttle system will only be effective in reducing traffic on the Road if it includes elements of the described Transportation Demand Management system.
- Information is the key to providing a quality visitor experience during the Road rehabilitation period. As the responses from the *2000 Survey of Visitors* demonstrated, if visitors or potential visitors know ahead of time that Going-to-the-Sun Road is under construction, and if they have detailed, accurate information about how, where, when, and to what extent the construction might affect their travel on the Road, they can and are willing to adjust their plans accordingly.

## List of Preparers

**Joseph J. Kracum, P.E.**, Project Manager and Engineering Study Task Manager, Washington Infrastructure Services, Inc. Mr. Kracum has 25 years of experience in planning through construction management phases of engineering projects, specializing in roadways, bridges, tunnels, and site development.

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We gratefully acknowledge the contributions of the National Park Service, Federal Highway Administration, and the many other professionals who contributed their knowledge and expertise to the development of these documents.

### **Field Reconnaissance Team, Fall 2000**

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Mr. Dick Gatten of FHWA accompanied the team through the investigation. Park personnel were provided as requested to assist the team with specific areas of investigation and understanding.